FACT SHEET FOR NPDES PERMIT NO. WA0022489
City of Long Beach Wastewater Treatment Plant

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the City. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department of Ecology (Ecology) will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION

Applicant:	City of Long Beach
Facility Name and Address:	City of Long Beach Wastewater Treatment Plant 6th Street NE Long Beach, Washington
Type of Treatment:	Activated Sludge
Discharge Location:	Wetlands to Tinker Lake to Willapa Bay Latitude: 46° 21' 19" N. Longitude: 124° 02' 51" W.
Water Body ID Numbers:	WA-25-9050 WA-24-0020

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The City of Long Beach (City) constructed the original wastewater collection and treatment systems in 1956. The wastewater treatment plant (WWTP) consisted of a 3-cell lagoon. In 1970, the City modified the treatment system to an extended aeration activated sludge system by constructing two aeration basins and one clarifier. The lagoons were converted to polishing ponds.

COLLECTION SYSTEM STATUS

A report titled*, Town of Long Beach, Washington, Facility Plan, March 1980*, by Haner, Ross & Sporseen, Inc., describes the service area as "relatively flat, sandy ground, ranging from the dune area on the west to a boggy chain of lakes on the east." The report also states that groundwater levels range throughout the year from a depth of 3 feet to the soil surface.

The City installed its first municipal wastewater collection system in 1956. That work consisted of installing 58,000 lineal feet (LF) of pipe and constructing five pump stations. Since the topography of the City is relatively flat, all wastewater receives pumping for transport to the treatment plant. Presently, the City has nine pump stations throughout the collection system.

TREATMENT PROCESSES

The present treatment system consists of a headworks with two parallel channels and manually cleaned bar screens, two aeration basins operated in parallel, a secondary clarifier, and a chlorine contact chamber. Waste activated sludge receives treatment in a two stage aerobic digestion system.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent discharges through an exposed outfall to a wetlands contiguous with Tinker Lake. According to an environmental checklist in the Haner, Ross & Sporseen, Inc. report, Tinker Lake is not well defined in size and surface area. The lake area contains wetlands on either side that extend over an area larger than the lake itself.

The following is from the report:

> *Tinker Lake is one lake in a chain of lakes. Flow from the area south of Tinker Lake,* (where the treatment plant outfall is located*) flows through the lake to Pioneer Road then eastward along the south side of the road across Peninsula Road into the Tarlott Slough drainage and on to Willapa Bay. Any additional flows into Tinker Lake, either from the south or as wastewater from the sewage treatment plant will flow out along the drainage and change in elevation would be quite minute.*
>
> *The drainage area of the lake system above where the Long Beach sewer effluent discharges contains 1085 acres. Equating the yearly average rainfall of 83 inches to obtain an annual hourly rainfall yields:*
>
> *83 in/365 days = 0.23 in/24 hrs = 0.01 in/hr*
>
> *Using the rational formula Q = AIC*

A = Area in acres I = Intensity C = Runoff

Q = 1085 x 0.01 x .7 (on a yearly basis all rainfall not evaporated will become runoff)

Q = 7.6 cfs (cubic feet per second) *runoff through Tinker Lake*

1.2 MGD = 1.86 CFS effluent discharge from plant in year 2000

From the above it appears that in year 2000 the Long Beach wastewater effluent will be 20% of the flow into Tinker Lake.

Tinker Lake has a visible area of 9.7 acres, the wetland area adds about 47.3 acres for a total water surface area of 57 acres. If the water in Tinker Lake averages 3 feet deep and the wetlands area is 1 foot deep, the lake area contains about 25,000,000 gallons. At the inflow rates stated above. The detention time in the lake would be about 4 days.

The WWTP has discharged at this location for over 40 years. The discharge from the WWTP is less than the volume forecast in the 1982 report. Presently the WWTP discharges an annual average flow of 0.43 cfs.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifier, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill. Solids removed from the secondary clarifier are treated in a two stage aerobic digester system and land applied under a permit from the Pacific County Health District.

PERMIT STATUS

Ecology issued the previous permit for this discharge on October 29, 1986. That permit expired on October 29, 1991. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, and fecal coliform bacteria.

The City submitted an application for permit renewal on September 5, 1997. Ecology accepted the application as complete on September 18, 1997.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last permit compliance inspection on August 20, 1997.

During the history of the previous permit, the City has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to Ecology and inspections conducted by Ecology.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Value or Concentration
Flow	0.280 MGD
BOD_5	6.2 mg/l
TSS	8.8 mg/l
Total Chlorine Residuals	0.72 mg/l
pH	Between 6.2 and 9.5 units

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the City is required to notify Ecology.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

Ecology obtained the design criteria for this treatment plant from the engineering report prepared by Haner, Ross, and Sporseen, Inc. in 1982 and are as follows:

Table 2: Design Standards for the City of Long Beach WWTP.

Parameter	Design Quantity
Monthly average dry weather flow	0.40 MGD
Instantaneous peak flow	1.2 MGD
BOD_5 influent loading	800 lb/day
TSS influent loading	834 lb/day
Design population equivalent	4000

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state).

These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

Chapter 173-221 WAC specifies the following technology-based limits for pH, fecal coliform bacteria, BOD_5, and TSS:

Table 3: Technology-based Limitations.

Parameter	Limitations
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.4 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 100 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 150 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). The criteria specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. If surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, then the permit will specify the water quality-based limitations.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The data for the receiving water are limited. The data indicate ambient water quality is probably lower for dissolved oxygen and temperature than the designated classification criteria given in Chapter 173-201A WAC. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to a wetland that flows into nearby Tinker Lake with discharge to Willapa Bay. According to WAC 173-201A, a waterbody must have a mean detention time greater than 15 days to be considered a lake. According to the available information, and based on annual precipitation, the wetland and Tinker Lake have an average detention time of approximately 5 days. Ecology will evaluate the discharge for compliance with the water quality standards based on a river receiving water with Class A standards, with exceptions for dissolved oxygen. Characteristic uses include the following:

Water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this receiving water are summarized below:

Fecal Coliform Bacteria	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum (sampling indicates 6 mg/L)
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls that Ecology has determined to be AKART. The chronic and acute mixing zones are authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of Plumes3 interface and CORMIX mathematical models. The permit writer calculated the following dilution factors (see Appendix C):

	Acute	Chronic
Aquatic Life	4.4	13.6
Human Health, Carcinogen		13.6
Human Health, Non-carcinogen		13.6

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

Ecology assumes the critical condition occurs during the months of August and September when precipitation and subsequent runoff to the wetland is minimal. The ambient background data used for this permit includes the following from the City's sampling and testing, and data from the engineering report:

Parameter	**Value used**
Velocity	0.00025 m/s
Depth	0.5 meter
Width	130 meters
Temperature	22°C
pH	7.25
Dissolved Oxygen	6.0 mg/L
Total Ammonia-N	0.9 mg/L
Fecal Coliform Bacteria	6/100 mL

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform bacteria, chlorine, and ammonia, were determined as shown below, using the dilution factors described above.

BOD_5--Under critical conditions the Streeter-Phelps model calculated a violation of the dissolved oxygen criterion for the receiving water. However, this model may not be appropriate for evaluating the discharge's effect on the dissolved oxygen in the receiving water. Rather than specify a BOD_5 limitation of less value than the technology-based standard, the draft permit requires the City to test the receiving water for dissolved oxygen in upstream and downstream directions from the discharge.

Temperature and pH--The impact of pH and temperature were modeled using the calculations from EPA, 1988. The input variables were dilution factor 13.6, upstream temperature 22^{o}C, upstream pH 7.25, upstream alkalinity 50(as mg $CaCO_3$/L), effluent temperature 20^{o}C, effluent pH of 6, effluent pH of 9, and effluent alkalinity 60 (as mg $CaCO_3$/L).

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH was placed in the permit and temperature was not limited.

Fecal Coliform Bacteria--The numbers of fecal coliform bacteria were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml, even though the WWTP produces an effluent with significantly lower concentrations of fecal coliform bacteria, and a dilution factor of 13.6.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine and ammonia. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine if the permit would specify effluent limitations for chlorine and ammonia.

The determination of the reasonable potential for chlorine and ammonia to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) during the critical condition. The critical condition occurs in late summer when precipitation is lowest. The permit writer used the following parameters in the critical condition modeling: acute dilution factor 4.4 , chronic dilution factor 13.6, receiving water temperature 22^{o}C, and receiving water ammonia 0.9 mg/L.

The permit writer calculated effluent limits for chlorine, which was determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits follow:

Parameter	Average Monthly Limit	Daily Maximum Limit
Total Chlorine Residuals	0.033 mg/L	0.083 mg/L

The proposed permit contains a compliance schedule for meeting the water quality-based limits for chlorine. The City is now in planning to improve the treatment process and a decision to change from chlorine disinfection to ultraviolet light disinfection has been made before the permit writer drafted this fact sheet. The proposed permit allows the City two years to plan, design, and construct the process necessary to meet the water quality-based chlorine limitations.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. Ecology may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

Ecology has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require dischargers to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Ecology has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

Ecology has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by Ecology shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This City has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for activated sludge WWTPs.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Ecology has accredited the City's laboratory for: TSS, BOD, pH, fecal coliform bacteria, chlorine, dissolved oxygen and total volatile solids.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the City to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the City is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Pacific County Health Department.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), Ecology has been delegated authority to administer the Pretreatment Program (i.e., act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs))**.** Under this delegation of authority, Ecology has exercised the option of issuing wastewater discharge permits for significant industrial users (SIUs) discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which Ecology is delegating to such POTWs because they are in a better position to implement the requirements (e.g., tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), Ecology is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing SIUs (40 CFR 403.8 (f)(1)(i)).

Ecology is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the City's sewer system. Industrial dischargers must obtain these permits from Ecology prior to the City

accepting the discharge (WAC 173-216-110(5)). (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact Ecology to determine if a permit is required.) Industrial dischargers need to apply for a State Waste Discharge Permit 60 days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

Ecology requires this POTW to fulfill some of the functions required for the pretreatment program in the NPDES permit (e.g., tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from Ecology. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the City's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from Ecology.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to " take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the City's sewerage system." Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a state waste discharge permit and to send a copy of the written notification to Ecology. Ecology will then take steps to solicit a state waste discharge permit application.

Annual Submittal of List of Industrial Users

This provision requires the POTW to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is intended to update Ecology on an annual basis of the status of industrial users in the POTW's service area, without requiring the POTW to go through the process of performing a formal Industrial User Survey. This provision is normally applied to POTWs not serving industrial or commercial users. Although this permit does not require performance of an Industrial User Survey, the City is nevertheless required under the previous section, to take adequate continuous routine measures to identify existing and new industrial discharges.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from Ecology. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by Ecology for Developing Partial Pretreatment Program by POTW

Ecology has committed to providing technical and legal assistance to the City in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by Ecology.

Condition G1 requires responsible officials or their designated representatives to sign submittals to Ecology. Condition G2 requires the City to allow Ecology to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the City to apply to Ecology prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the City to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the City from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 relates to permit renewal. Condition G8 prohibits the reintroduction of removed substances back into the effluent. Condition G9 states that Ecology will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G10 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G11 notifies the City that additional monitoring requirements may be established by Ecology. Condition G12 requires the payment of permit fees. Condition G13 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology has tentatively determined to reissue a permit to the City of Long Beach. The permit contains conditions and effluent limitations that are described in the fact sheet.

Public notice of application was published on August 20, 1997, in the *Chinook Observer* newspaper to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

Ecology will publish a Public Notice of Draft (PNOD) in the *Chinook Observer* newspaper to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98408-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. Ecology will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Ecology will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. Ecology's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from Ecology by telephone, (360) 407-6272, or by writing to the address listed above.

The permit and fact sheet were written by Charlie Hoffman.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5—Five day biochemical oxygen demand is the quantity of oxygen utilized by a mixed population of microorganisms in an aerobic oxidation for 5 days at a controlled temperature of 20°C. BOD is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of rainfall-caused surface water drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone—A volume of receiving water that surrounds an effluent discharge within which water quality criteria may be exceeded. The volume of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington state permit writers are joint NPDES/State permits issued under both state and federal laws.

Pass through -- A discharge which exits the POTW into waters of the ~~—s~~tate in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

   Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

   *The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the City. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

APPENDIX D--RESPONSE TO COMMENTS

Permit Type:	National Pollutant Discharge Elimination System (NPDES)
Permit Number:	WA0022489
Permittee:	City of Long Beach P.O. Box 310 Long Beach, WA 98631
Permitting Authority:	Washington State Department of Ecology Southwest Regional Office P.O. Box 47775 Olympia, WA 98504-7775

In accordance with 40 CFR 122.62 and 124, the Department of Ecology (Ecology) publicly noticed a tentative decision to issue a new NPDES permit for the City of Long Beach's wastewater treatment plant. Ecology published a Public Notice of Draft (PNOD) in the *Chinook Observer* newspaper to inform the public that a draft permit and fact sheet were available for review. The notice, published on April 28, 1998, required public submittal of written comments within 30 days of the date of notification. Ecology received written comments from the Washington State Department of Health and Gray and Osborne consulting engineers.

Ecology has either quoted or paraphrased the comments. The comments, Ecology's response, and the resulting permit action follow:

Comments from the Washington State Department of Health – Office of Shellfish Programs:

Comment: According to Ecology's *Permit Writers Manual* the monitoring frequency for activated sludge wastewater treatment plants (WWTP) with average design flows between 0.1 million gallons per day (MGD) and 2.0 MGD is daily for total residual chlorine and two times per week for fecal coliform bacteria. The monthly average dry weather design flow for the existing WWTP is 0.4 MGD. The proposed monitoring frequency for chlorine is only five times per week and for fecal coliform bacteria once per week.

Response: The *Permit Writers Manual* lists suggested monitoring frequencies based on treatment plant type and capacity. The permit writer used best professional judgement utilizing the *Permit Writers Manual* and three years of discharge monitoring records (DMRs) to establish the monitoring requirements. This well run WWTP, effluent 5-day biochemical oxygen demand (BOD_5), and total suspended solids (TSS) typically below 10 milligrams per liter (mg/l) each, has had stable effluent chlorine residual and fecal coliform bacteria concentrations. Based on these factors, Ecology believes the monitoring requirements in the draft permit are adequate to determine compliance with the permit limitations.

Action: No change to the permit.

Comment: The Shellfish program requests that the "Reporting -- Shellfish Clause" be included in the permit. Even though the discharge from this facility does not enter immediately into a shellfish production area, flow from the receiving waters of Tinker Lake eventually reaches the Tarlott Slough drainage area of Willapa Bay, which is a significant commercial shellfish area.

Response: Ecology concurs with the Department of Health's request.

Action: Ecology has added the standard language to the permit requiring the permittee to contact the Department of Health in the event of a disinfection failure.

Comments from Gray and Osborne, consulting engineers:

Comment: Page 12 of the fact sheet requires the City to submit annually a list of existing and proposed SIUs and PSIUs. This requirement is not included in the Summary of Permit Report Submittals.

Response: The requirement on page 12 for the fact sheet for the city to submit a list of significant industrial users (SIUs) and potential significant industrial users (PSIUs) was not included in the permit's summary of report submittals because the permit does not require such submittal.

This response to comments amends the fact sheet and the requirement on page 12 for an annual submittal of SIUs and PSIUs. The submittal described in the fact sheet is not required. Ecology instructs the city to comply with the permit requirements.

Action: No change to the permit.

Comment: The city requests that the interim effluent limitations remain in effect for a period of three years and three months rather than the two year period stated in this paragraph. The city is currently in the process of preparing a general sewer plan/facility plan that will contain the necessary planning for improvements to the wastewater treatment facility required to meet the final effluent limitations. The city is anticipating applying to the CCWF/SRF program for grants and/or loans for the design and subsequent construction of the necessary treatment plant upgrades. The following is the projected schedule for the design and construction of the improvements given the application periods and the constrains of the CCWF/SRF program:

Task	Projected Completion Date
DOE approval of general sewer/facilities plan	January 1999
Application to CCWF/SRF program for design of new facilities	February 1999
Design of new facilities	December 1999

Task	Projected Completion Date
DOE approval of new facilities	January 2000
Application to CCWF/SRF program for construction of new facilities	February 2000
Begin construction	September 2000
Complete construction	September 2001

Assuming the NPDES permit becomes final in July 1998 the date for the city being able to meet the final effluent limitation is three years and three months in the future.

The city suggests that this section (Condition S1.D) read as follows:

D. Compliance Schedule for Meeting Water Quality-based Chlorine Limitations

The Permittee shall comply with the water quality-based limitations for total chlorine residual in Condition S1.B, no later than three years, 3 months after permit issuance.

The Permittee shall meet the following schedule for compliance:

Item:	Completion Date:
Engineering Report	(1 year from permit issuance)
Plans and Specifications	(1 year 8 months from issuance)
Compliance with Final Effluent Limitations	(3 years 3 months after permit issuance)

Response: The City of Long Beach's compliance with the water quality standards will not be dependent upon grant or loan funding. Presently the discharge violates the water quality standard for chlorine. Many other communities have had to comply with the same requirement and have done so by either dechlorinating or changing to ultra-violet light disinfection. Two years is an adequate amount of time to comply with the final chlorine limitations.

Action: No change to the permit.

Comment: Footnote 1. To the Monitoring Schedule indicates that "the Permittee shall monitor the receiving water for dissolved oxygen at a convenient location but far enough downstream to test for oxygen demand effect." However, Page 8 of the fact sheet states that "the draft permit requires the city to test the receiving water for dissolved oxygen in upstream and downstream directions from the discharge." Please clarify this requirement. The wetlands preceding Tinker Lake, the outfall location and Tinker Lake are not easily accessible. The sampling locations may be quite remote from the discharge location.

Response: Ecology realizes a location to obtain a representative sample of the receiving water may not be easily accessible. However, the modeling indicates the discharge will cause violations of the water quality standards. Ecology realizes the modeling may not provide accurate results and is allowing the city to monitor the receiving water to evaluate the actual effects. The city will have to choose sampling locations appropriate for evaluating the effluent's oxygen demand. Ecology has addressed Gray and Osborne's comment regarding upstream sampling in the footnote to the monitoring schedule.

Action: Footnote 1 to Condition S2. states, "The Permittee shall monitor the receiving water for dissolved oxygen, in both upstream and downstream directions from the discharge, at appropriate locations to evaluate the discharge's effect on receiving water dissolved oxygen."

Comment: The ambient parameters for the CORMIX dilution analysis indicates that the ambient flowrate is 0.01 m^3/s. Page 3 of the fact sheet indicates that the flowrate (runoff rate) through Tinker Lake is 7.6 cfs (0.215 m^3/s). Please clarify this apparent discrepancy.

Response: As Ecology explained in the fact sheet, the 7.6 cubic feet per second (cfs) value for runoff through Tinker Lake is from a 1980 report by Haner, Ross & Sporseen, Inc. This value is based on the yearly average rainfall for the Long Beach area.

When evaluating compliance with the water quality standards, Ecology must evaluate compliance during the critical condition. For discharges to freshwater this usually means during summer conditions when the water temperatures are highest and ambient flow is the lowest. Using the 7.6 cfs average yearly value for runoff through Tinker Lake would be an incorrect assumption for the critical condition. Without having actual data available Ecology used best professional judgement and assumed that the treatment plant effluent was the major input to Tinker Lake during the summer.

The input to the computer modeling programs requires the ambient velocity. Ecology used a value of 0.00025 meters per second (m/s) based on the flow from the WWTP, the cross-sectional area of the receiving water in the vicinity of the discharge, and an allowance for groundwater contribution to the surface water. Page 9 of the fact sheet lists the parameters.

Action: No change to the permit.

Comment: The stratification type parameters in the CORMIX modeling indicate the surface temperature of the receiving water is 20°C. Page 8 of the fact sheet, temperature and pH, indicates that the upstream temperature is 22°C. Please clarify the apparent discrepancy.

Response: The temperature of the receiving water for the summer condition, based on actual sampling results, is 22°C. The CORMIX modeling program calculates unusual results when the temperature for the receiving water is a higher value than the effluent. Therefore, Ecology had to use equal values of 20°C for both the receiving water and effluent temperatures.

Because the receiving water condition is atypical Ecology used CORMIX initially and then used the U model results for the reasonable potential analysis. Sometimes the

conditions do not match exactly to the requirements of the modeling programs and adjustments to actual conditions are necessary.

Action: **No change to the permit.**

Comment: The Streeter-Phelps analysis used a WWTP discharge rate of 0.3636 cfs (235,000 gpd). The CORMIX model used a discharge flowrate of 0.012275m^3/s (280,119 gpd) and page 3 of the fact sheet states the average annual discharge flow rate from the WWTP is 0.43 cfs (277,896 gpd). Please clarify this apparent discrepancy.

Response: For evaluating chronic conditions the *Permit Writer's Manual* requires the permit writer to use the highest monthly average flow rate, over the past three years, during the critical condition. For the DMRs from 1995 through 1997 the highest monthly average flowrate for the critical condition, chosen by the permit writer to occur during September, was 235,000 GPD.

The CORMIX modeling was performed before Ecology settled on the conditions for final modeling using the PLUMES interface and the U model. As explained in a previous comment, the CORMIX and PLUMES interface models were both used to evaluate dilution because of the atypical discharge conditions.

The annual average discharge is not applicable for evaluating compliance with the water quality standards.

Action: **No change to the permit.**

Comment: The Streeter-Phelps analysis assumes the upstream discharge is 0.0009 cfs whereas the CORMIX analysis assumes the ambient flowrate is 0.01 m^3/s (0.3531 cfs). This is a large difference in values and would greatly affect the assessment of either mixing zones or the dissolved oxygen sag. Please clarify this apparent discrepancy.

Response: Ecology used the Streeter-Phelps mathematical model to evaluate the discharge's effect on the dissolved oxygen in the receiving water. Ecology performed numerous analyses using variations of ambient flow, and effluent CBOD, NBOD, and dissolved oxygen concentrations. The modeling results indicate that the effluent may cause violations of the water quality standard for dissolved oxygen. That is the reason for requiring dissolved oxygen monitoring in the receiving water. The printout included the fact sheet was just one of the calculations performed.

Action: **No change to the permit.**